

# FOR TEACHERS ONLY

The University of the State of New York  
REGENTS HIGH SCHOOL EXAMINATION

## P.S.–E.S. PHYSICAL SETTING/EARTH SCIENCE

Thursday, June 14, 2018 — 9:15 a.m. to 12:15 p.m., only

### SCORING KEY AND RATING GUIDE

**Directions to the Teacher:**

Refer to the directions on page 2 before rating student papers.

Updated information regarding the rating of this examination may be posted on the New York State Education Department’s web site during the rating period. Check this web site at: <http://www.p12.nysed.gov/assessment/> and select the link “Scoring Information” for any recently posted information regarding this examination. This site should be checked before the rating process for this examination begins and several times throughout the Regents Examination period.

**Part A and Part B–1**

Allow 1 credit for each correct response.

**Part A**

1 ..... 3 .....	10 ..... 2 .....	19 ..... 3 .....	28 ..... 4 .....
2 ..... 4 .....	11 ..... 2 .....	20 ..... 4 .....	29 ..... 4 .....
3 ..... 1 .....	12 ..... 3 .....	21 ..... 2 .....	30 ..... 1 .....
4 ..... 1 .....	13 ..... 2 .....	22 ..... 2 .....	31 ..... 1 .....
5 ..... 3 .....	14 ..... 4 .....	23 ..... 3 .....	32 ..... 1 .....
6 ..... 4 .....	15 ..... 2 .....	24 ..... 1 .....	33 ..... 3 .....
7 ..... 2 .....	16 ..... 1 .....	25 ..... 4 .....	34 ..... 1 .....
8 ..... 1 .....	17 ..... 1 .....	26 ..... 2 .....	35 ..... 2 .....
9 ..... 4 .....	18 ..... 4 .....	27 ..... 3 .....	

**Part B–1**

36 ..... 2 .....	40 ..... 1 .....	44 ..... 3 .....	48 ..... 2 .....
37 ..... 1 .....	41 ..... 3 .....	45 ..... 4 .....	49 ..... 2 .....
38 ..... 4 .....	42 ..... 1 .....	46 ..... 2 .....	50 ..... 4 .....
39 ..... 3 .....	43 ..... 3 .....	47 ..... 3 .....	

## Directions to the Teacher

Follow the procedures below for scoring student answer papers for the Regents Examination in Physical Setting/Earth Science. Additional information about scoring is provided in the publication *Information Booklet for Scoring Regents Examinations in the Sciences*.

**Do not attempt to correct the student's work by making insertions or changes of any kind. If the student's responses for the multiple-choice questions are being hand scored prior to being scanned, the scorer must be careful not to make any marks on the answer sheet except to record the scores in the designated score boxes. Marks elsewhere on the answer sheet will interfere with the accuracy of the scanning.**

Allow 1 credit for each correct response.

At least two science teachers must participate in the scoring of the Part B–2 and Part C open-ended questions on a student's paper. Each of these teachers should be responsible for scoring a selected number of the open-ended questions on each answer paper. No one teacher is to score more than approximately one-half of the open-ended questions on a student's answer paper. Teachers may not score their own students' answer papers.

Students' responses must be scored strictly according to the Scoring Key and Rating Guide. For open-ended questions, credit may be allowed for responses other than those given in the rating guide if the response is a scientifically accurate answer to the question and demonstrates adequate knowledge as indicated by the examples in the rating guide. On the student's separate answer sheet, for each question, record the number of credits earned and the teacher's assigned rater/scorer letter.

Fractional credit is *not* allowed. Only whole-number credit may be given for a response. If the student gives more than one answer to a question, only the first answer should be rated. Units need not be given when the wording of the questions allows such omissions.

For hand scoring, raters should enter the scores earned in the appropriate boxes printed on the separate answer sheet. Next, the rater should add these scores and enter the total in the space provided. The student's score for the Earth Science Performance Test should be recorded in the space provided. Then the student's raw scores on the written test and the performance test should be converted to a scale score by using the conversion chart that will be posted on the Department's web site at: <http://www.p12.nysed.gov/assessment/> on Thursday, June 14, 2018. The student's scale score should be entered in the box labeled "Scale Score" on the student's answer sheet. The scale score is the student's final examination score.

**Schools are not permitted to rescore any of the open-ended questions on this exam after each question has been rated once, regardless of the final exam score. Schools are required to ensure that the raw scores have been added correctly and that the resulting scale score has been determined accurately.**

Because scale scores corresponding to raw scores in the conversion chart may change from one administration to another, it is crucial that, for each administration, the conversion chart provided for that administration be used to determine the student's final score.

## Part B–2

**Allow a maximum of 15 credits for this part.**

To ensure the accuracy of overlays, select a printer setting such as *full*, *actual size* or *100%* when printing this document. Do **not** select the *fit to page* setting.

**51** [1] Allow 1 credit for magnesium/Mg and iron/Fe.

**52** [1] Allow 1 credit for a correct luster, hardness, and dominant form of breakage. Acceptable responses include, but are not limited to:

Luster:

- nonmetallic
- vitreous/glassy
- pearly
- silky

Hardness:

- Allow any value or range from 2.0 to 3.0.

Dominant form of breakage:

- cleavage/basal cleavage
- breaks into thin sheets
- one direction of cleavage

**53** [1] Allow 1 credit for pegmatite.

**54** [1] Allow 1 credit if *both* responses are correct. Acceptable responses include, but are not limited to:

Environment of formation:

- intrusive
- plutonic
- deep underground

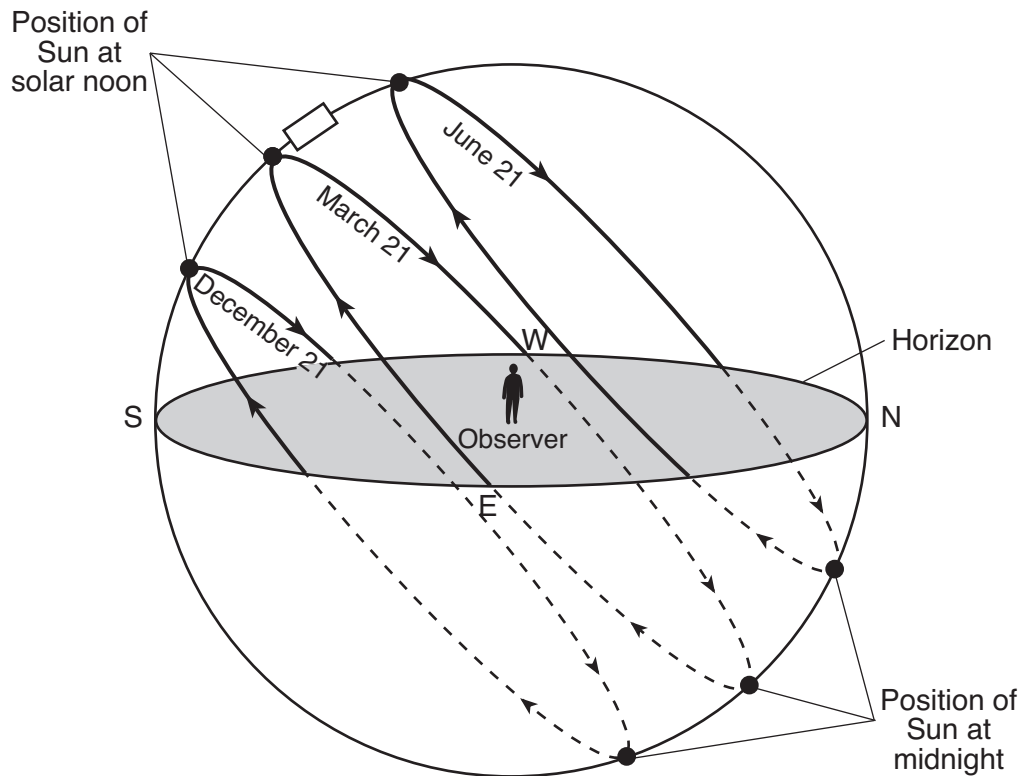
Relative rate of cooling:

- slower/slowly
- took a longer time/long time

**Note:** Do *not* allow credit for “long” alone as this does not accurately describe a rate of cooling, but a duration.

55 [1] Allow 1 credit if the center of the **X** is within or touches the boxed area shown below.

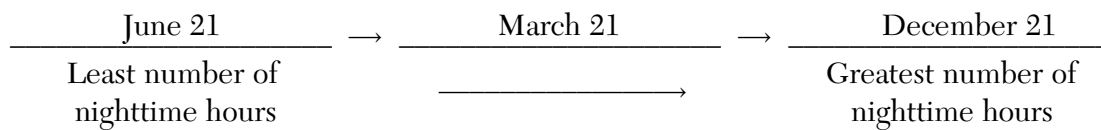
**Note:** It is recommended that an overlay of the same scale as the student answer booklet be used to ensure reliability in rating.



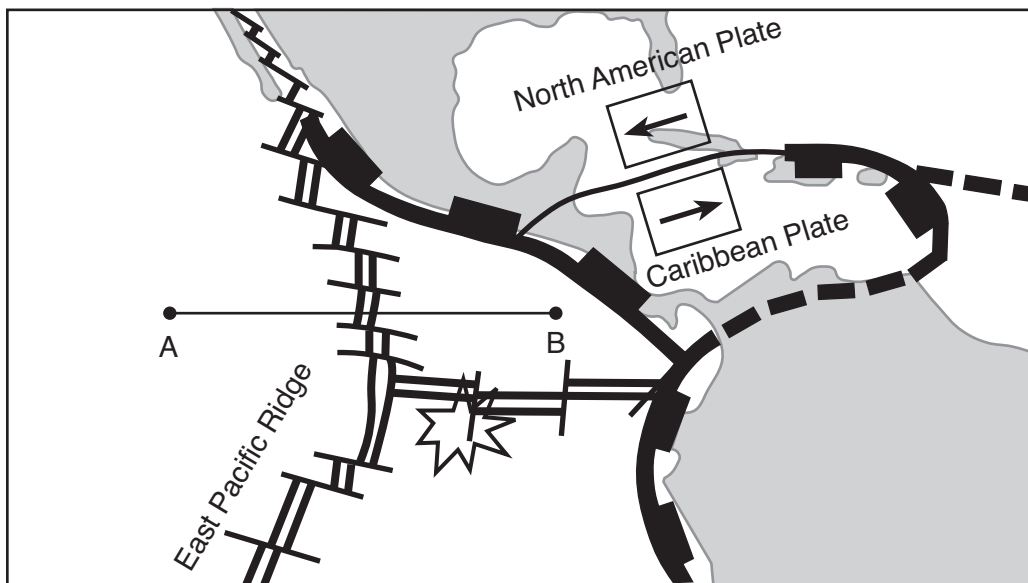
56 [1] Allow 1 credit for 15 °/h.

57 [1] Allow 1 credit for North/N.

58 [1] Allow 1 credit for a correct sequence as shown below.



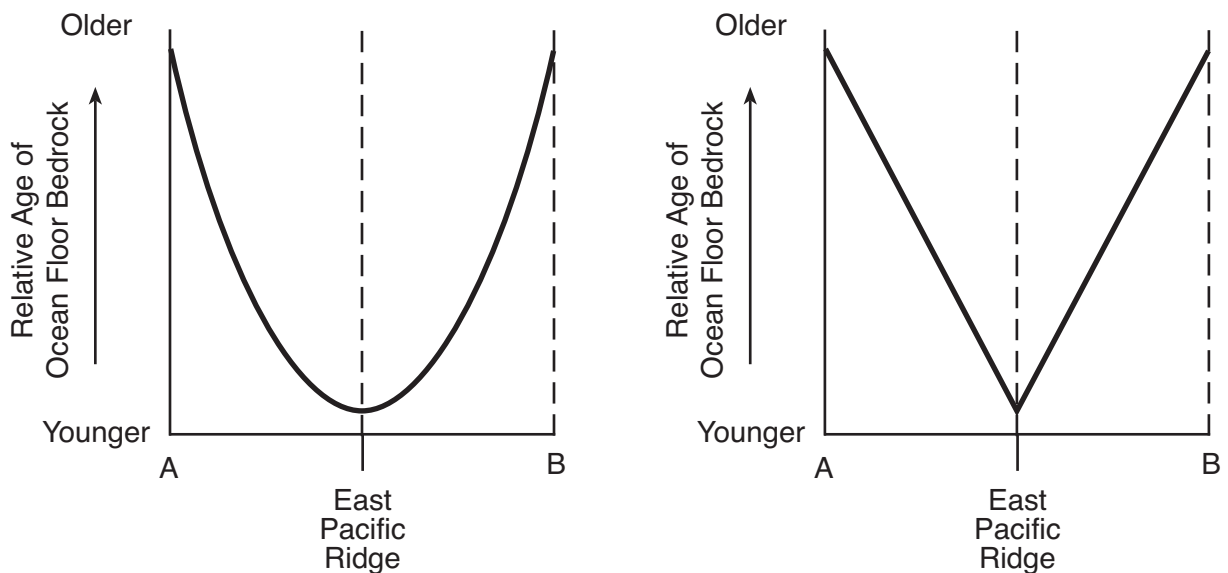
59 [1] Allow 1 credit for the correct direction of both arrows as shown below.



**Note:** Allow credit if arrows extend through the boxes or are drawn outside of the boxes (on the correct plates) as long as they show proper plate motion.

60 [1] Allow 1 credit for a V-shaped or U-shaped line showing the oldest bedrock ages above A and B and the youngest bedrock age at the East Pacific Ridge.

**Examples of 1-credit responses:**



**Note:** Allow credit even if the oldest bedrock ages above A and B are not the same relative age.

61 [1] Allow 1 credit for Galapagos Hot Spot and Nazca Plate.

62 [1] Allow 1 credit for basalt/basaltic bedrock and a density of  $3.0 \text{ g/cm}^3$  or  $3 \text{ g/cm}^3$ .

63 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

- The smaller particles filled the pore space between the larger particles and decreased the total amount of open pore space.
- Pore spaces between the pebbles were filled by sand, silt or clay.
- Small particles take up spaces between larger particles.

**Note:** Do *not* allow credit for “it has less pores” or “less pore space” because that is restating the question.

Do *not* allow credit for “particles fit together more closely” or “particles are more closely packed” alone because this is stated in the question.

64 [1] Allow 1 credit for 4 cm/s.

65 [1] Allow 1 credit for pebbles.

**Part C**

**Allow a maximum of 20 credits for this part.**

- 66** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- The isobars are closest together.
  - Steepest pressure gradient occurs at Watertown.
  - The closer the isolines/lines, the faster the wind speed.

- 67** [1] Allow 1 credit if *all three* weather variables are correct, as shown in the table below.

**Albany, New York**

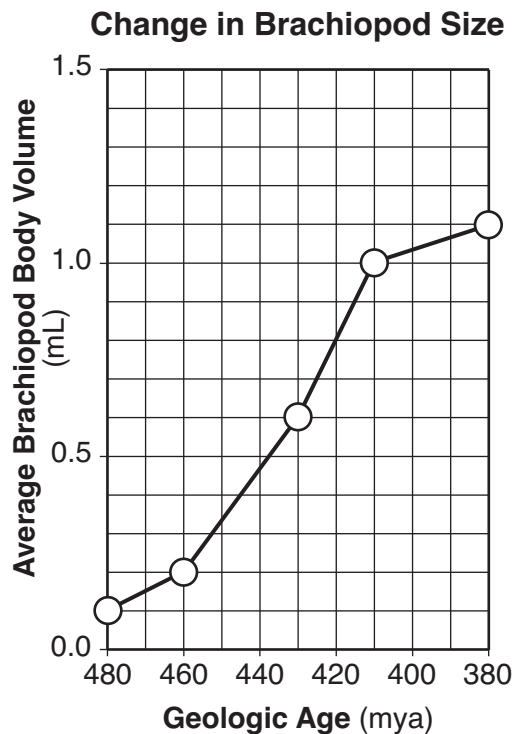
<b>Weather Variable</b>	<b>Weather Data</b>	
Dewpoint	36	°F
Cloud cover	25	%
Actual barometric pressure	1005.1	<b>mb</b>

- 68** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- East/E
  - East northeast/ENE
  - Northeast/NE
  - North northeast/NNE

- 69 [1] Allow 1 credit if the centers of *all five* plots are within or touch the circles shown and the plots are correctly connected with a line that passes within or touches the circles.

**Note:** Allow credit if the student-drawn line does *not* pass through the student plots but is still within or touches the circles.

It is recommended that an overlay of the same scale as the student answer booklet be used to ensure reliability in rating.



- 70 [1] Allow 1 credit for any *two* of Ordovician Period, Silurian Period, and/or Devonian Period.

**Note:** Do *not* allow credit for Early, Middle, or Late Ordovician, Early or Late Silurian, or Early, Middle or Late Devonian because these are epochs *not* periods.

- 71 [1] Allow 1 credit for *Eospirifer* and *Mucrospirifer*.

- 72 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

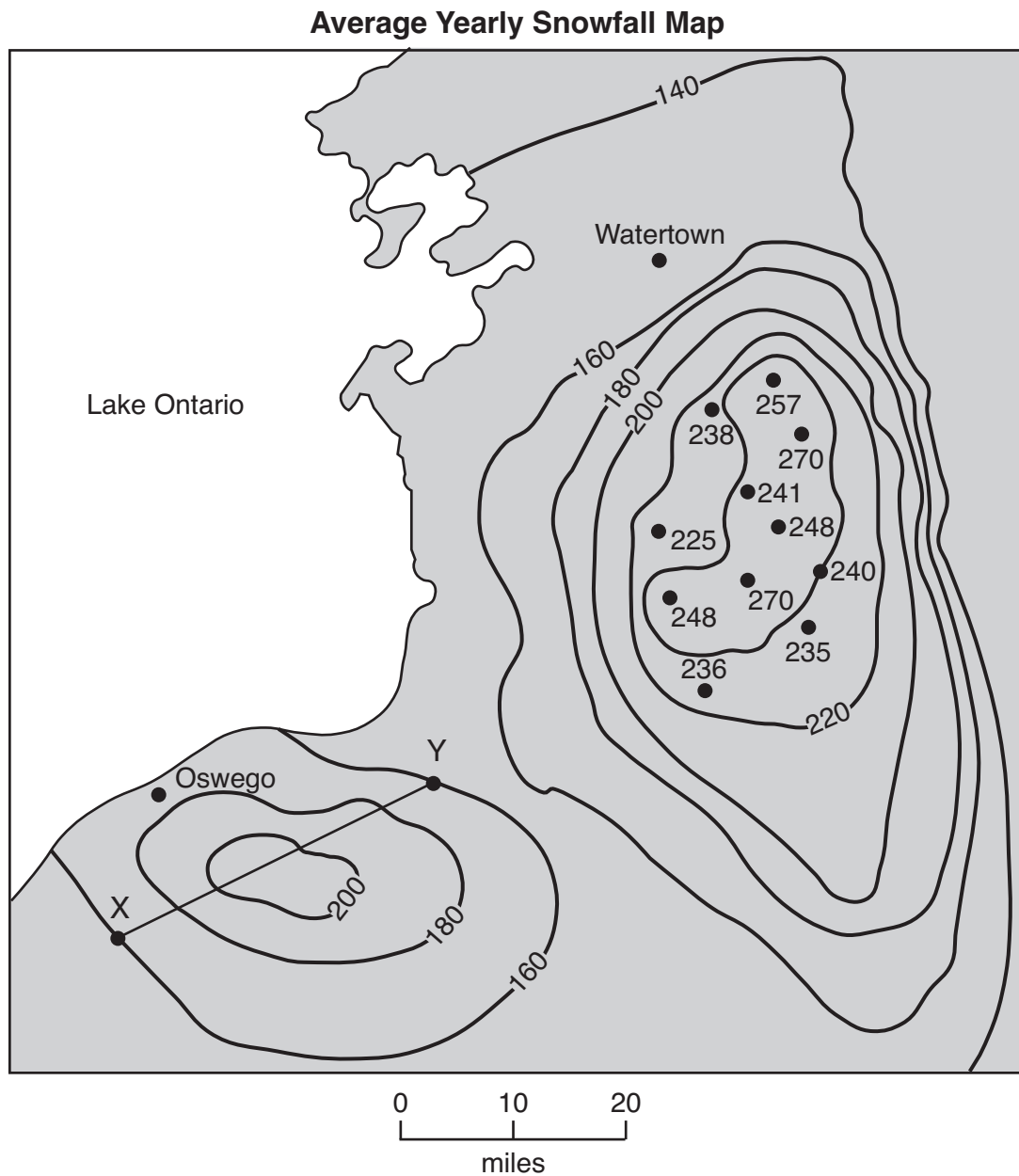
- The fossil record shows that horses have become larger over geologic time.
- Large dogs are much smaller than horses of today.
- The average horse of today is a large animal, so horses must have become larger since Eocene time.



73 [1] Allow 1 credit for correctly drawing the 240-inch isoline. The isoline must pass through or touch the 240 dot.

**Note:** If additional lines are drawn, all must be drawn correctly to receive credit.

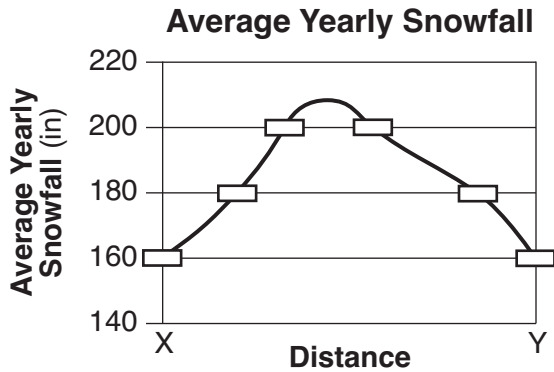
**Example of a 1-credit response:**



- 74 [1] Allow 1 credit if the centers of *all six* plots are within or touch the rectangles shown and are correctly connected with a line that passes within or touches each rectangle. The line must extend above the 200-inch line, but remain below the 220-inch line.

**Note:** It is recommended that an overlay of the same scale as the student answer booklet be used to ensure reliability in rating.

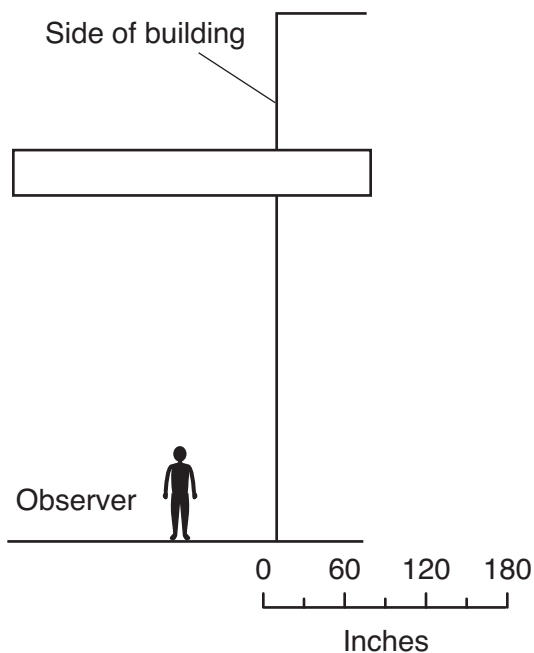
Allow credit if the student-drawn line does *not* pass through the student plots, but is still within or touches the rectangles.



- 75 [1] Allow 1 credit if the center of the **X** is within or touches the edge of the box shown.

**Note:** Allow credit if a symbol other than an **X** is used.

It is recommended that an overlay of the same scale as the student answer booklet be used to ensure reliability in rating.



76 [1] Allow 1 credit for radiation.

77 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

- Black is a good absorber of electromagnetic energy/sunlight/insolation.
- Black is a good absorber and a good radiator.
- Dark colors take in radiation better than light colors.
- Black absorbs more energy.

**Note:** Do *not* allow credit for “black absorbs energy” alone because all colors absorb energy. Black is just a better absorber of that energy.

78 [1] Allow 1 credit for infrared/IR and circling longer.

79 [1] Allow 1 credit for the Milky Way.

80 [1] Allow 1 credit for Mars.

81 [1] Allow 1 credit for Kepler-62b *or* 62b and an acceptable explanation. Acceptable explanations include, but are not limited to:

- Kepler-62b is closest to *Kepler-62*.
- The closer a planet is to a star, the shorter its period of revolution.
- Closer planets orbit faster.
- It has the shortest orbital path.
- Kepler-62b is closest to its sun.

82 [1] Allow 1 credit for Kepler-62e and Kepler-62f, and an acceptable explanation. Acceptable explanations include, but are not limited to:

- Kepler-62e and Kepler-62f are located in the habitable zone.
- Kepler-62e and Kepler-62f are located at a distance from *Kepler-62* to allow water to remain in the liquid phase.
- They have the correct temperature.
- These planets have the correct distance from the star.

**Note:** Do *not* allow credit for “located farthest from the star” alone, because this does not refer to the habitable zone.

**83** [1] Allow 1 credit. Acceptable responses include, but are not limited to:

- The sediments are unsorted.
- The sediments are unlayered.
- mixed sediment sizes ranging from boulders to clay
- unorganized arrangement

**84** [1] Allow 1 credit for C → B → D → A.

**85** [1] Allow 1 credit for Pleistocene Epoch.

## Regents Examination in Physical Setting/Earth Science

June 2018

### Chart for Converting Total Test Raw Scores to Final Examination Scores (Scale Scores)

**The *Chart for Determining the Final Examination Score for the June 2018 Regents Examination in Physical Setting/Earth Science* will be posted on the Department's web site at: <http://www.p12.nysed.gov/assessment/> on Thursday, June 14, 2018. Conversion charts provided for previous administrations of the Regents Examination in Physical Setting/Earth Science must NOT be used to determine students' final scores for this administration.**

#### **Online Submission of Teacher Evaluations of the Test to the Department**

Suggestions and feedback from teachers provide an important contribution to the test development process. The Department provides an online evaluation form for State assessments. It contains spaces for teachers to respond to several specific questions and to make suggestions. Instructions for completing the evaluation form are as follows:

1. Go to <http://www.forms2.nysed.gov/emsc/osa/exameval/reexameval.cfm>.
2. Select the test title.
3. Complete the required demographic fields.
4. Complete each evaluation question and provide comments in the space provided.
5. Click the **SUBMIT** button at the bottom of the page to submit the completed form.

## Map to Core Curriculum

<b>June 2018 Physical Setting/Earth Science</b>			
<b>Question Numbers</b>			
Key Ideas/Performance Indicators	Part A	Part B	Part C
<b>Standard 1</b>			
Math Key Idea 1	5	49, 60, 64	69, 74, 80
Math Key Idea 2	13, 16, 25, 27	36, 43, 44, 65	
Math Key Idea 3		48, 60	66
Science Inquiry Key Idea 1	4, 22, 30	38, 42, 46, 54, 56, 57, 63	71, 76, 77, 84
Science Inquiry Key Idea 2			
Science Inquiry Key Idea 3	2, 3, 5, 6, 8, 10, 13, 15, 16, 21, 24, 25, 27, 28, 29, 31, 35	39, 41, 45, 47, 49, 51, 52, 53, 54, 59, 61, 62, 64, 65	67, 68, 70, 71, 78, 79, 80, 85
Engineering Design Key Idea 1			
<b>Standard 2</b>			
Key Idea 1			68
Key Idea 2			
Key Idea 3	7		
<b>Standard 6</b>			
Key Idea 1	20, 32	52, 54, 56	83, 84
Key Idea 2	1, 8, 9, 10, 11, 12, 18, 19, 20, 22, 23, 24, 30, 32, 33, 34, 35	36, 37, 40, 41, 44, 45, 47, 48, 49, 50, 55, 58, 59, 61	66, 67, 70, 71, 73, 74, 75, 80, 81, 82, 83, 84
Key Idea 3		48, 50	75
Key Idea 4			
Key Idea 5	5, 9, 12, 19, 23, 35	37, 41, 42, 43, 55, 57	68, 84
Key Idea 6	14, 33		
<b>Standard 7</b>			
Key Idea 1			
Key Idea 2	7		
<b>Standard 4</b>			
Key Idea 1	1, 2, 3, 4, 5, 9, 10, 11, 12, 16, 17, 19, 20, 23	36, 37, 38, 39, 40, 41, 42, 43, 44, 55, 56, 57, 63, 64	69, 70, 71, 72, 79, 80, 81, 82, 85
Key Idea 2	6, 7, 8, 13, 14, 15, 18, 21, 22, 24, 25, 26, 27, 30, 32, 33, 34	45, 46, 47, 48, 49, 50, 58, 59, 60, 61, 62, 65	66, 67, 68, 73, 74, 75, 76, 77, 78, 83, 84
Key Idea 3	28, 29, 31, 35	51, 52, 53, 54	
<b>Reference Tables</b>			
ESRT 2011 Edition (Revised)	2, 3, 5, 6, 8, 10, 13, 15, 16, 21, 24, 25, 27, 28, 29, 31, 35	39, 41, 45, 47, 49, 51, 52, 53, 54, 59, 61, 62, 64, 65	67, 68, 70, 71, 78, 80, 85